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PATENT

Attorney Docket No. 049128-5036

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Yun Bok LEE)	Confirmation No. 5647
)	
Application No.: 10/032,062)	Art Unit: 2815
)	
Filed: December 31, 2001)	Examiner: M. Warren
)	
For: LIQUID CRYSTAL DISPLAY HAVING)	Mail Stop Appeal Brief - Patents
A PROTECTIVE ALIGNMENT FILM)	
AND FABRICATING METHOD)	
THEREOF)	

Commissioner for Patents
U.S. Patent and Trademark Office
Mail Stop Appeal Brief - Patents
Alexandria, VA 22314

APPELLANT'S BRIEF TRANSMITTAL FORM

1. Transmitted herewith is the Appellant's Brief Under 37 C.F.R. § 41.37, which is being submitted further to the Notice of Appeal filed July 7, 2006.
2. Additional papers enclosed.

- ☐ Drawings: [] Formal [] Informal (Corrections)
- ☐ Information Disclosure Statement
- ☐ Form PTO-1449, ___ references included
- ☐ Citations
- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing", computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.

3. Oral Hearing Under 37 C.F.R. 1.194

- ☐ Oral hearing is hereby requested.
☐ Fee under 37 C.F.R. 1.17(d) is enclosed.

4. Extension of time

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

- ☐ Appellant petitions for an extension of time, the fees for which are set out in 37 CFR 1.17(a)-(d), for the total number of months checked below:

<u>Total months requested</u>	<u>Fee for extension</u>	<u>[fee for Small Entity]</u>
<input type="checkbox"/> one month	\$ 120.00	\$ 60.00
<input type="checkbox"/> two months	\$ 450.00	\$ 225.00
<input type="checkbox"/> three months	\$ 1,020.00	\$ 510.00
<input type="checkbox"/> four months	\$1,590.00	\$ 795.00
<input type="checkbox"/> five months	\$2,160.00	\$1,080.00

Extension of time fee due with this request: **\$ 0.00.**

If an additional extension of time is required, please consider this a Petition therefor.

5. Fee Payment

- ☐ No fee is to be paid at this time.
- ☒ The Commissioner is hereby authorized to charge **\$500.00** for the Appeal Brief filing fee due to Deposit Account No. 50-0310.

☒ The Commissioner is hereby authorized to charge any fees including fees due under 37 CFR 1.16 and 1.17 which may be required, or credit any overpayment to Deposit Account No. 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS

By: Mary Jane Boswell
Mary Jane Boswell
Reg. No. 33,652

Date: August 21, 2006

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PATENT
ATTORNEY DOCKET NO.: 049128-5036

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:)	
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APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37

This brief is in furtherance of the Notice of Appeal, filed in the above-identified patent application on July 7, 2006. The period for reply to which extends to September 7, 2006. In addition, the fee set forth under 37 C.F.R. § 41.20(b)(2) is being filed concurrently herewith.

1. The Real Party In Interest

The real party in interest in this appeal is LG.Philips LCD Co, Ltd. of Seoul, Korea.

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2. Related Appeals and Interferences

Appellant is not aware of any other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the appeal.

3. Status of Claims

The status of the claims is as follows:

Claims rejected: 1-5, 7, 8, 19, and 20.
Claims objected to: none.
Claims allowed: none.
Claims withdrawn: 9-18.
Claims canceled: 6.
Claims appealed: 1-5, 7, 8, 19, and 20.

4. Status of Amendments

All Amendments have been entered to date. Most recently, on May 8, 2006, Appellant filed an Amendment under 37 C.F.R. § 1.116 in response to the Final Office Action dated February 8, 2006. Subsequently, the Examiner issued an Advisory Action which indicated that the Amendment under 37 C.F.R. § 1.116 filed on May 8, 2006, will be entered for purposes of Appeal. Appellant filed a Notice of Appeal on July 7, 2006, with a Pre-Appeal Brief Request for Review. On August 8, 2006, a Notice of Panel Decision from Pre-Appeal Brief Review was issued. Accordingly, appealed claims, as presented in the Amendment under 37 C.F.R. § 1.116 filed on May 8, 2006, are attached as Claims Appendix to this brief.

5. Summary of the Claimed Subject Matter

An aspect of Appellant's present invention relates generally to a liquid crystal display device and a fabricating method of a liquid crystal display device that are capable of reducing the number of masks and the process time of fabrication.

Independent Claim 1

With respect to independent claim 1, as discussed in Appellant's specification beginning at paragraph [0063] on page 12 and shown in FIGs. 9 and 10, a liquid crystal display device having liquid crystal cells arranged in a matrix type includes a gate line 85 for receiving a scanning signal, a data line 83 for receiving a data signal, a pixel electrode 96 provided at an intersection of the gate line 85 and the data line 83 to drive a liquid crystal cell, a thin film transistor (generally at 82/86/90/92) for responding to the scanning signal to switch the data signal into the pixel electrode 96, a common line 100 laterally adjacent to the pixel electrode 96 along a direction of one of the gate and data lines 85 and 83, and an alignment film 98 formed on at least a portion of the gate line 85, the data line 83 and the pixel electrode 96 to determine a primary alignment direction of a liquid crystal, wherein the pixel electrode 96 and the common electrode 100 are disposed directly on an insulating layer 84 that serves as the gate insulating layer of the thin film transistor (generally at 82/86/90/92), and wherein the alignment film 98 directly contacts upper and side surfaces of the common line 100, upper and side surfaces of the pixel electrode 96, and upper surfaces of the source and drain electrodes 90 and 92 of the thin film transistor (generally at 82/86/90/92).

Independent Claim 4

With regard to independent claim 4, as discussed in Appellant's specification beginning at paragraph [0063] on page 12 and shown in FIGs. 9 and 10, a liquid crystal display device having liquid crystal cells arranged in a matrix type includes a gate line 85 for receiving a scanning signal, a data line 83 for receiving a data signal, a pixel electrode 96 and a common electrode 100 provided at a pixel area near an intersection of the gate line 95 and the data line 93 to drive a liquid crystal cell, a thin film transistor (generally at 82/86/90/92) for responding to the scanning signal to switch the data signal into the pixel electrode 96, a common line 100 laterally adjacent to the pixel electrode 96 along a direction of one of the gate and data lines 85 and 83, and an alignment film 98 entirely coated on a substrate 80 to protect signal wires including the gate line 85, the data line 83, the pixel electrode 96 and the common electrode 100 and to determine a primary alignment direction of a liquid crystal, wherein the pixel electrode 96 and the common electrode 100 are disposed directly on an insulating layer 84 that serves as the gate insulating layer of the thin film transistor (generally at 82/86/90/92), and wherein the alignment film 98 directly contacts upper and side surfaces of the common line 100, upper and side surfaces of the pixel electrode 96, and upper surfaces of the source and drain electrodes 90 and 92 of the thin film transistor (generally at 82/86/90/92).

6. Grounds of Rejection To Be Reviewed On Appeal

Claims 1-4, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shin et al. (US 6,271,903) in view of Kim (US 6,177,970).

Claim 5, 19, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shin et al. in view of Kim ('970) and Kim et al. (US 6,388,727).

7. Argument

(i) Rejections under 35 U.S.C. § 112, first paragraph

No claims are presently rejected under 35 U.S.C. § 112, first paragraph.

(ii) Rejections under 35 U.S.C. § 112, second paragraph

No claims are presently rejected under 35 U.S.C. § 112, second paragraph.

(iii) Rejections under 35 U.S.C. § 102

No claims are presently rejected under 35 U.S.C. § 102.

(iv) Rejections under 35 U.S.C. § 103

Claims 1-4, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shin et al. (US 6,271,903) in view of Kim (US 6,177,970), and claim 5, 19, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shin et al. in view of Kim ('970) and Kim et al. (US 6,388,727). Appellant respectfully traverses this rejection for the following reasons.

The Final Office Action admits that "Shin shows all of the elements of the claims except the alignment film contacting the common line and the common line disposed directly on the gate insulating layer." Accordingly, the Final Office Action relies upon FIG. 5 of Kim ('970) to show "a liquid crystal display device having liquid crystal cells arranged in a matrix type, comprising a common line (310) laterally adjacent to the pixel electrode (810)." Thus, the Final Office Action concludes that it would have been obvious to "modify the alignment film of Shin by forming the film in contact with a common line as taught by Kim to minimize the drive voltage and reduce an afterimage in an LCD device." Appellant respectfully disagrees.

Shin et al. explicitly teaches, as shown in FIG. 2, as well as prior art FIG. 13, that capacitive coupling is required between pixel and common electrodes with an insulating layer disposed therebetween to cancel parasitic capacitance during driving of the liquid crystal cell. Specifically, as shown in FIG. 13 of Shin et al., first and second end portions 33 and 36 of the pixel electrode 29 must overlie corresponding first and second end portions 34 and 35 of the common electrode 22. In addition, as shown in FIG. 14 of Shin et al., the common electrodes 22 and the pixel electrode 29 are purposely formed on different planes with the gate insulating film 24 disposed therebetween from the required capacitive couplings between the

common and pixel electrodes 22 and 29. Moreover, as shown in FIG. 2 of Shin et al., capacitance generating sections 65 and 66 are explicitly formed by the structure of the pixel 54 and the common lines 55 and 56 with the insulating layer 58 formed in-between. Accordingly, Appellant respectfully asserts that the structures shown in FIGs. 1, 2, 13, and 14, all must be formed with an insulating layer formed between the pixel electrode and common electrodes/lines to cancel parasitic capacitance during driving of the liquid crystal cell.

However, in direct contrast to the required structures of Shin et al., Kim ('970) explicitly teaches, in FIG. 5, formation of pixel and common electrodes 40 and 310 formed on a gate insulating layer 50, wherein a protection insulating layer 80 is purposely formed over both the TFT structure at one end region of the pixel region (a) and a common signal line 30 at an opposing end region of the pixel region (a). Accordingly, Kim ('970) explicitly teaches forming an alignment layer 90 disposed apart from source and drain electrodes 710 and 720 of the TFT structure outside of the pixel region (a) and directly upon the pixel and common electrodes 40 and 310 within the pixel region (a). Appellant respectfully asserts that the structures of Kim ('970) actually explicitly require formation of the protection insulating layer 80 between the alignment layer 90 and the source and drain electrodes 710 and 720. As a result, combining the taught structures disclosed by Kim ('970) with the explicit structures disclosed and required by Shin et al. would result in a structure wherein the alignment layer of Shin et al. would not directly contact "upper surfaces of the source and drain electrodes of the thin film transistor," as explicitly required by independent claims 1 and 4. Thus, Appellant respectfully asserts that the Final Office Action fails to establish a *prima facie* case of obviousness with regard to at least independent claims 1 and 4.

Moreover, as explicitly required by Shin et al., the capacitive coupling of the common and pixel electrodes 53 and 54 is accomplished by placing the common and pixel electrodes 53 and 54 above and below the insulating layer 58. In direct contrast to Shin et al., Kim fails to teach or suggest an embodiment where the capacitive coupling is accomplished at both ends of the pixel electrodes 40, wherein the pixel and common electrodes 40 and 310 are formed on a gate insulating layer such that the alignment layer 90 of Shin et al. directly contacts “upper surfaces of the source and drain electrodes of the thin film transistor,” as explicitly required by independent claims 1 and 4.

In addition, Appellant respectfully asserts that Kim ('727) fails to remedy the above-described deficiencies of Shin et al. and Kim ('970) since Kim ('727) fails to provide proper motivation with which to form the alignment layer directly contacting the source and drain electrodes and formation of both pixel and common electrodes on a gate insulating film.

For at least the above reasons, since the Final Office Action fails to meet the requirements for establishing a *prima facie* case of obviousness as to independent claims 1 and 4, claims 1 and 4 are not obvious. Furthermore, since claims 2, 3, 5, 7, 8, 19, and 20 depend from claims 1 and 4, and incorporate all the features of claims 1 and 4, claims 2, 3, 5, 7, 8, 19, and 20 are not obvious at least for the above reasons for which independent claims 1 and 4 are not obvious. Thus, Appellant respectfully requests that the rejections of claims 1-5, 7, 8, 19, and 20 under 35 U.S.C. § 103(a) be withdrawn.

(v) Other Rejections

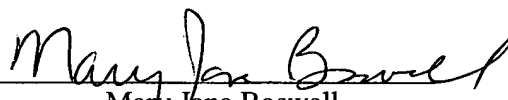
No claims are presently rejected under grounds other than those referred to above.

In view of the foregoing, Appellant respectfully requests the reversal of the Examiner's rejection and allowance of the pending claims. If there are any other fees due in connection with the filing of this Appeal Brief, please charge the fees to our Deposit Account No. 50-0310.

If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account No. 50-0310.

Respectfully submitted,

MORGAN LEWIS & BOCKIUS LLP

By: 
Mary Jane Boswell
Reg. No. 33,652

Dated: August 21, 2006

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8. Claims Appendix

Claim 1 (Previously Presented): A liquid crystal display device having liquid crystal cells arranged in a matrix type, comprising:

a gate line for receiving a scanning signal;

a data line for receiving a data signal;

a pixel electrode provided at an intersection of the gate line and the data line to drive a liquid crystal cell;

a thin film transistor for responding to the scanning signal to switch the data signal into the pixel electrode;

a common line laterally adjacent to the pixel electrode along a direction of one of the gate and data lines; and

an alignment film formed on at least a portion of the gate line, the data line and the pixel electrode to determine a primary alignment direction of a liquid crystal,

wherein the pixel electrode and the common electrode are disposed directly on an insulating layer that serves as the gate insulating layer of the thin film transistor, and wherein the alignment film directly contacts upper and side surfaces of the common line, upper and side surfaces of the pixel electrode, and upper surfaces of the source and drain electrodes of the thin film transistor.

Claim 2 (Original): The liquid crystal display device as claimed in claim 1, wherein the alignment film is formed of a polyimide resin.

Claim 3 (Original): The liquid crystal display device as claimed in claim 2, wherein the polyimide resin has a dielectric constant of about 3 and a thickness of about 500 to 700Å.

Claim 4 (Previously Presented): A liquid crystal display device having liquid crystal cells arranged in a matrix type, comprising:

- a gate line for receiving a scanning signal;

- a data line for receiving a data signal;

- a pixel electrode and a common electrode provided at a pixel area near an intersection of the gate line and the data line to drive a liquid crystal cell;

- a thin film transistor for responding to the scanning signal to switch the data signal into the pixel electrode;

- a common line laterally adjacent to the pixel electrode along a direction of one of the gate and data lines; and

- an alignment film entirely coated on a substrate to protect signal wires including the gate line, the data line, the pixel electrode and the common electrode and to determine a primary alignment direction of a liquid crystal,

wherein the pixel electrode and the common electrode are disposed directly on an insulating layer that serves as the gate insulating layer of the thin film transistor, and wherein the alignment film directly contacts upper and side surfaces of the common line, upper and side surfaces of the pixel electrode, and upper surfaces of the source and drain electrodes of the thin film transistor.

Claim 5 (Original): The liquid crystal display device as claimed in claim 4, wherein the common electrode is formed of a transparent conductive material at the same layer as the pixel electrode in such a manner as not to overlap the pixel electrode.

Claim 7 (Original): The liquid crystal display device as claimed in claim 4, wherein the alignment film is formed of a polyimide resin.

Claim 8 (Original): The liquid crystal display device as claimed in claim 7, wherein the polyimide resin has a dielectric constant of about 3 and a thickness of about 500 to 700Å.

Claim 19 (Previously Presented): The liquid crystal display device as claimed in claim 1, wherein the pixel electrode is formed of a first material, and wherein the source and drain electrodes are formed of a second material different from the first material.

Claim 20 (Previously Presented): The liquid crystal display device as claimed in claim 4, wherein the pixel electrode is formed of a first material, and wherein the source and drain electrodes are formed of a second material different from the first material.

9. **Evidence Appendix**

No information is appended under this section.

10. **Related Proceedings Appendix**

No information is appended under this section.